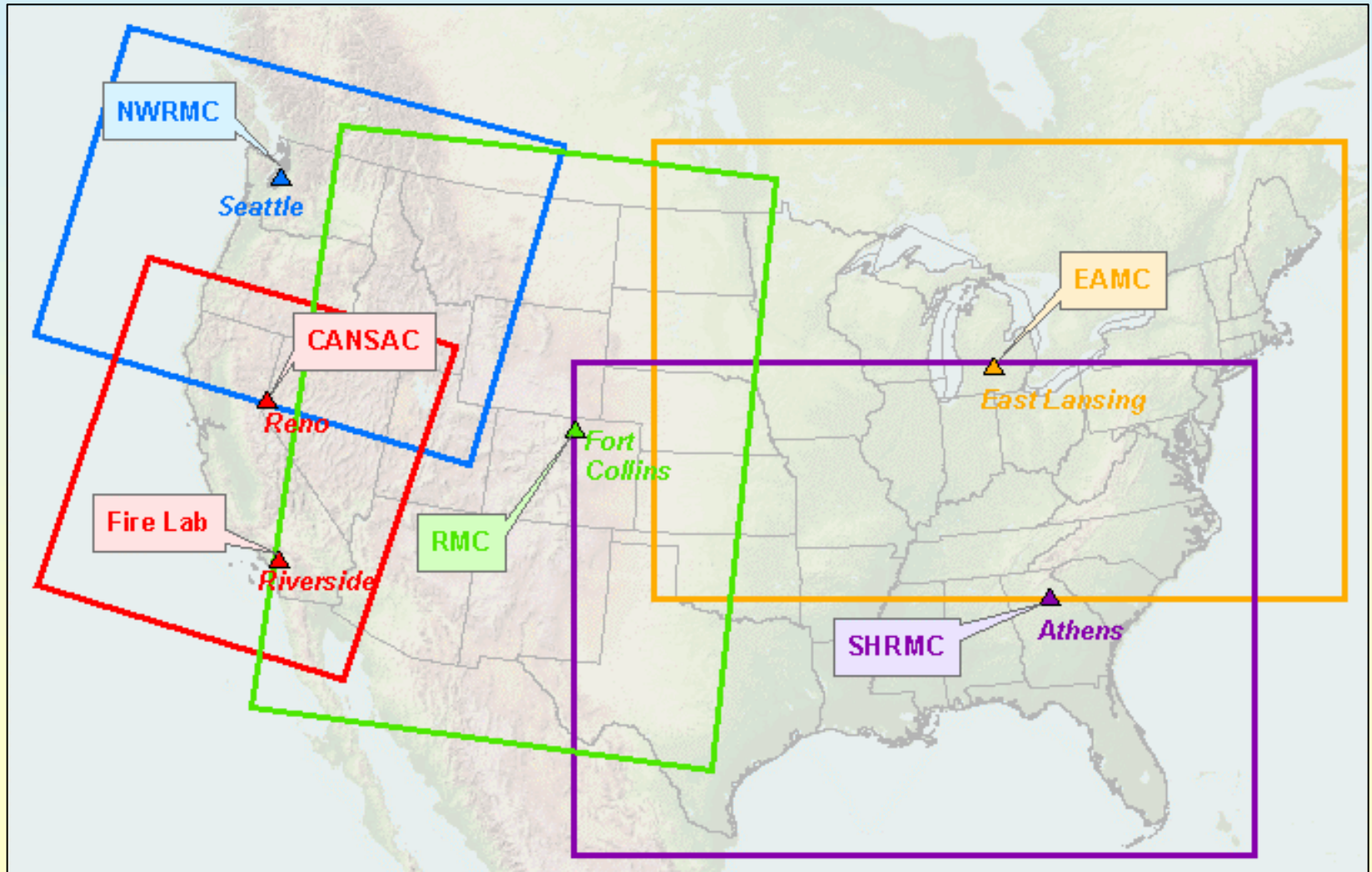


CANSAC OVERVIEW

***California and Nevada
Smoke and Air Consortium***

Updated November 2004

CANSAC is the southwest U.S. member of Fire Consortia For Advanced Modeling of Meteorology and Smoke (FCAMMS).



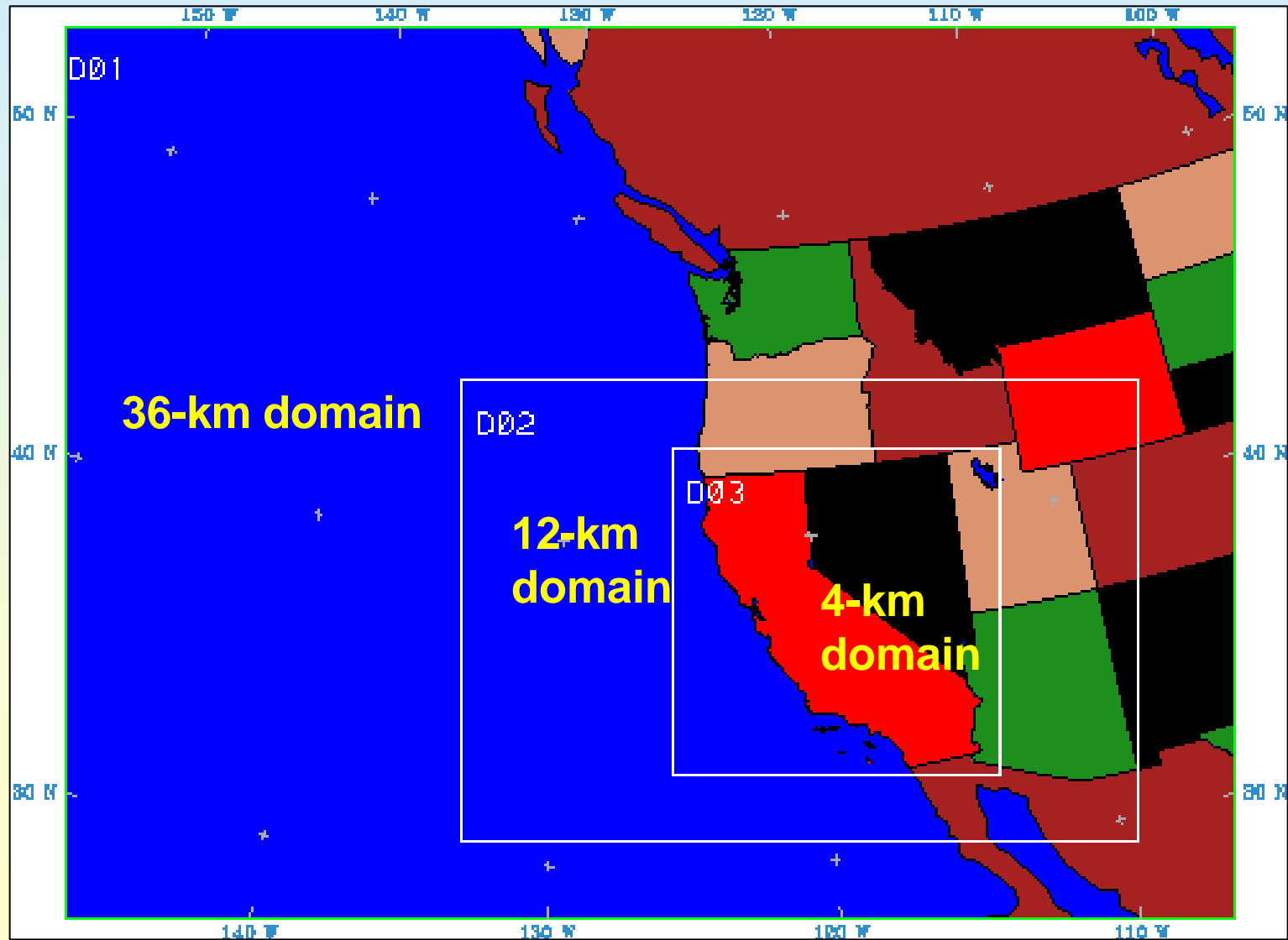
CANSAC consists of a **Board of Directors** and two main subgroups.
Tom Hatcher of the USFS is current Board Chairperson.

The subgroups are the Technical Advisory Group (TAG), chaired by Kemal Gurer of CARB, and the Operational Applications Group (OAG), currently chaired by John Snook, USFS

Current consortium membership includes:

USDA Forest Service Region 4	CA Air Resources Board (CARB)
USDA Forest Service Region 5	Naval Postgraduate School / HRMET
Pacific SW Research Station	CA Dept of Forestry and FP
BLM California	CA Contract counties
BLM Nevada	San Joaquin Valley Unified APCD
US Fish and Wildlife Service	Nevada Division of Forestry
National Park Service	

The CANSAC computation facility is called CAFF, and is housed at CEFA/ DRI in Reno. A mesoscale model called MM5 produces simulations on the following grid domains



- After rigorous testing a team of experts unanimously chose the SGI Altix 3700 as the best solution overall for CANSAC modeling
- Cost of this server was \$250K (discounted by over \$300K for academics, and to account for the hardware being demo unit)
- System processors: Thirty-two 1.3 GHz Itanium 2, with 3 MB cache (in two 16p racks)
- Processors are interconnected with 2Gbit switches and 3 meter, 50 micron optical cables
- All operating system and compiler software is included
- The system comes with a 3-year onsite warranty.

In addition to the main server unit, we purchased an SGI 2.2 terrabyte raid unit that is now directly integrated into the system. This includes the controller, 2Gbit network connection, fiber cables, and 3-year onsite warranty.

The cost of this storage device was \$24,000. This raid system provides for the short-term data storage issues. We will utilize DRI internal existing resources in regards to long-term tape backup.

Below is a CANSAC timetable for this past year

MONTH	ACTIONS OR EVENT
Feb-April	Computing system was purchased, assembled, and tested
May 19	CANSAC dedication and kickoff event was held in Reno
June 1	First products became available at 36 and 12 km resolution
July	First 4-km products available
July to present	Refining and tweaking of products
September	Julide Koracin hired as CANSAC modeler
late in year?	Use 4-km output to initialize diagnostic 1-km res. wind model

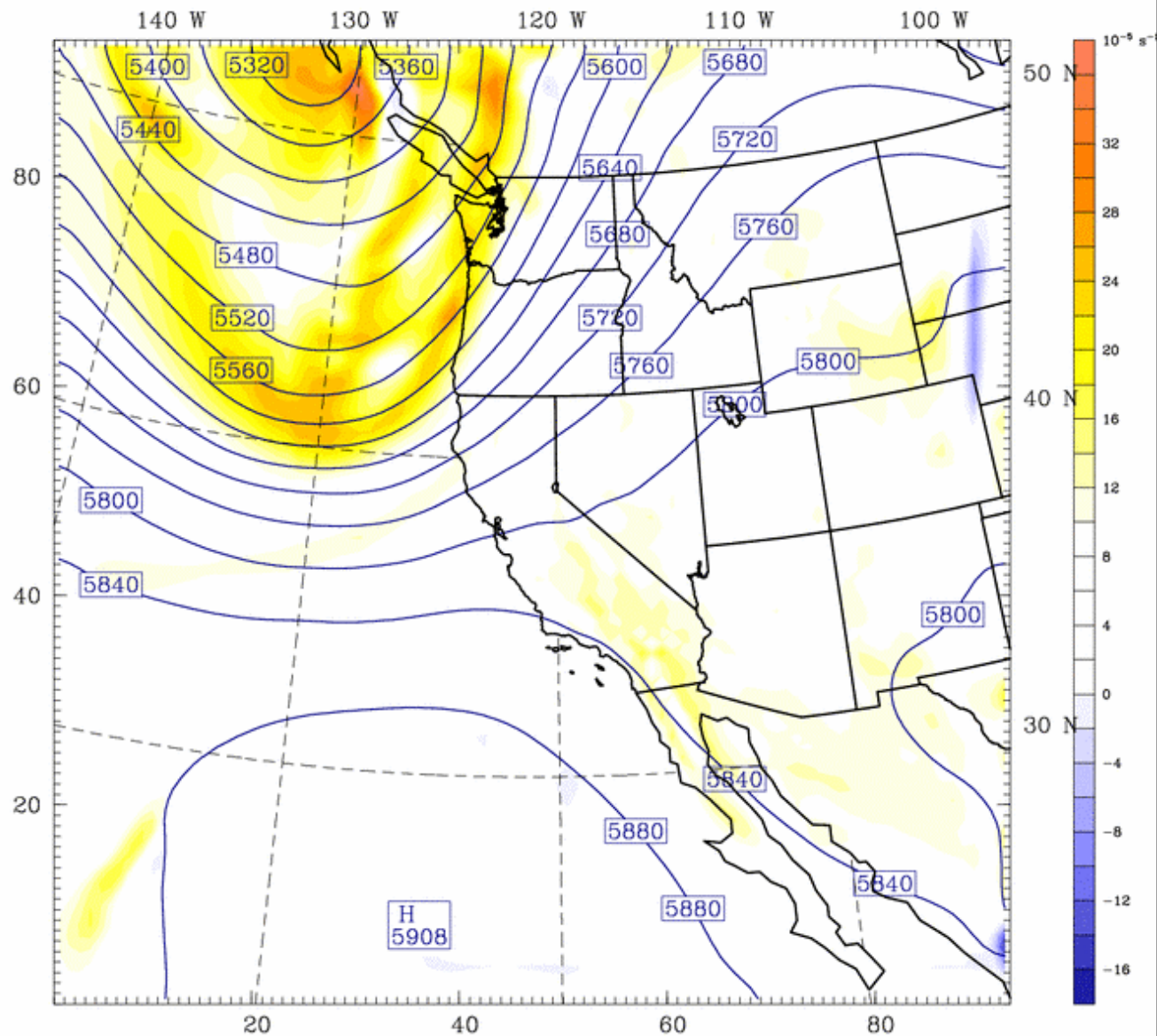
CANSAC held a very successful “kickoff” event in Reno this past May. First operational products went online June 1st.

The Products matrix is found at:

http://www.cefa.dri.edu/COFF/cansac_output.php

The following slides show examples of the types of graphics now being posted twice a day to the CANSAC website.

CANSAC MM5 Realtime: Domain 1 (36 km) Init: 0000 UTC Wed 06 Oct 04
Fcst: 69.00 Valid: 2100 UTC Fri 08 Oct 04 (1400 PDT Fri 08 Oct 04)
Absolute vorticity at pressure = 500 hPa
Geopotential height at pressure = 500 hPa sm= 5

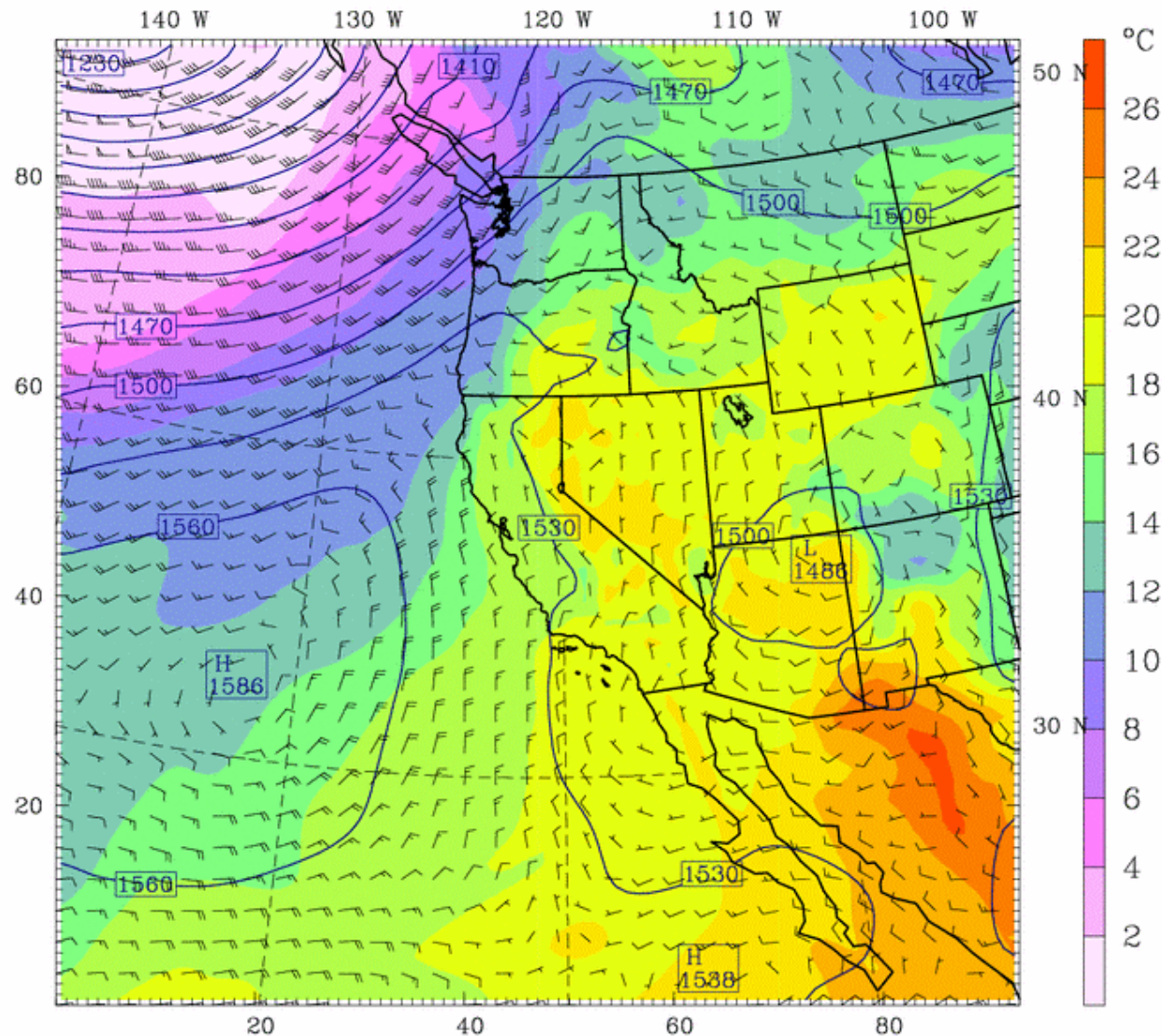


**500 millibar
pressure chart
(18000 ft- level)**

**Gold-colored
areas have
greater
counterclock-
wise rotation
than do the
white areas.
Blue is a
clockwise
rotation**

CONTOURS: UNITS=m LOW= 5320.0 HIGH= 5880.0 INTERVAL= 40.000
Model info: V3.6.3 Grell Eta PBL Simple ice 36 km, 31 levels, 108 sec

CANSAC MM5 Realtime: Domain 1 (36 km) Init: 1200 UTC Tue 05 Oct 04
 Fcst: 9.00 Valid: 2100 UTC Tue 05 Oct 04 (1400 PDT Tue 05 Oct 04)
 Temperature at pressure = 850 hPa sm= 1
 Geopotential height at pressure = 850 hPa sm= 5
 Horizontal wind vectors at pressure = 850 hPa sm= 1



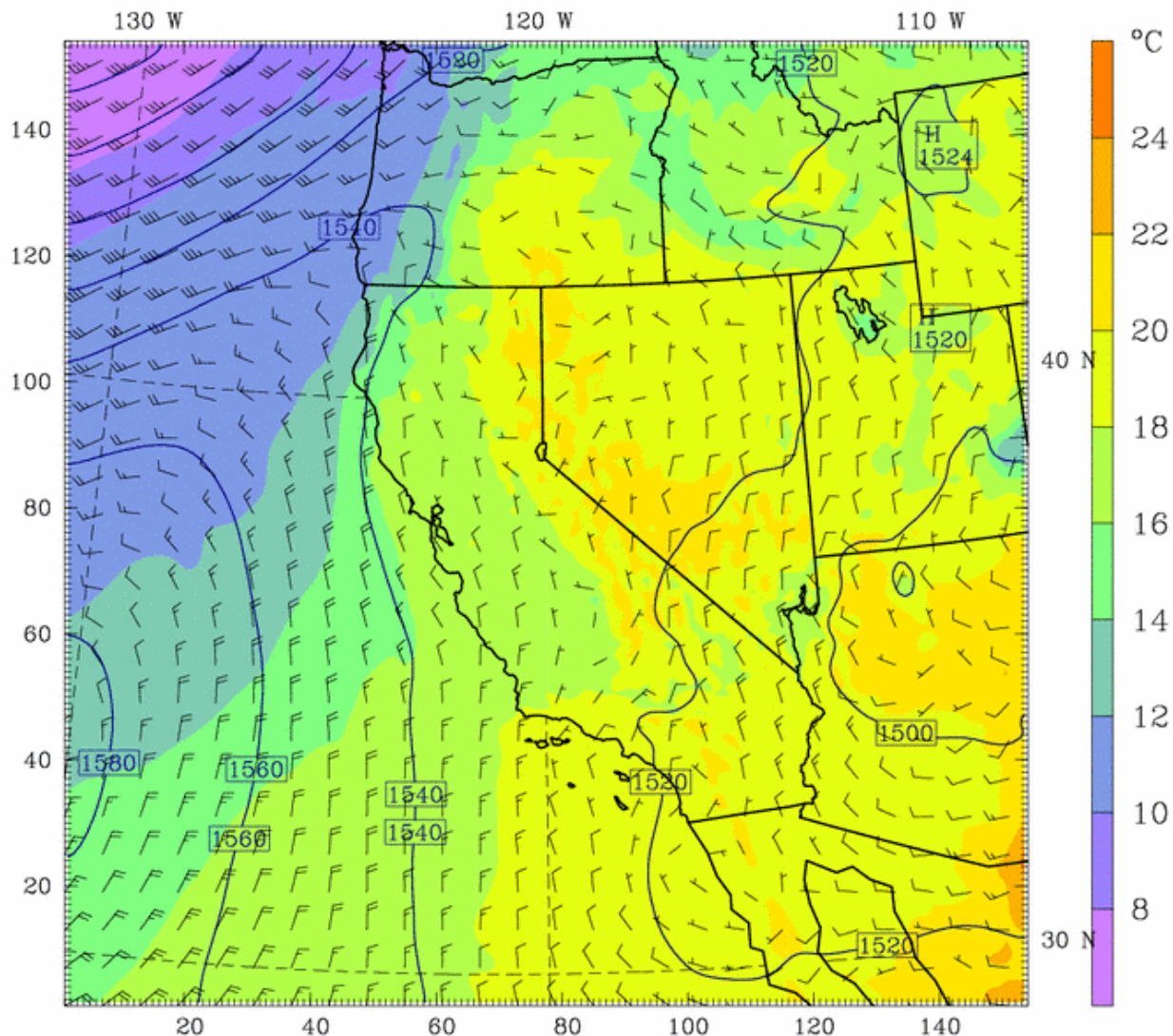
These next three graphics show the same weather map at the three different grid spacings used in CANSAC

850 mb heights, temps, and winds

from the largest CANSAC grid, 36 km

Model info: V3.6.3 Grell Eta PBL Simple ice 36 km, 31 levels, 108 sec
 CONTOURS: UNITS=m LOW= 1230.0 HIGH= 1560.0 INTERVAL= 30.000
 BARB VECTORS: FULL BARB = 10 kts

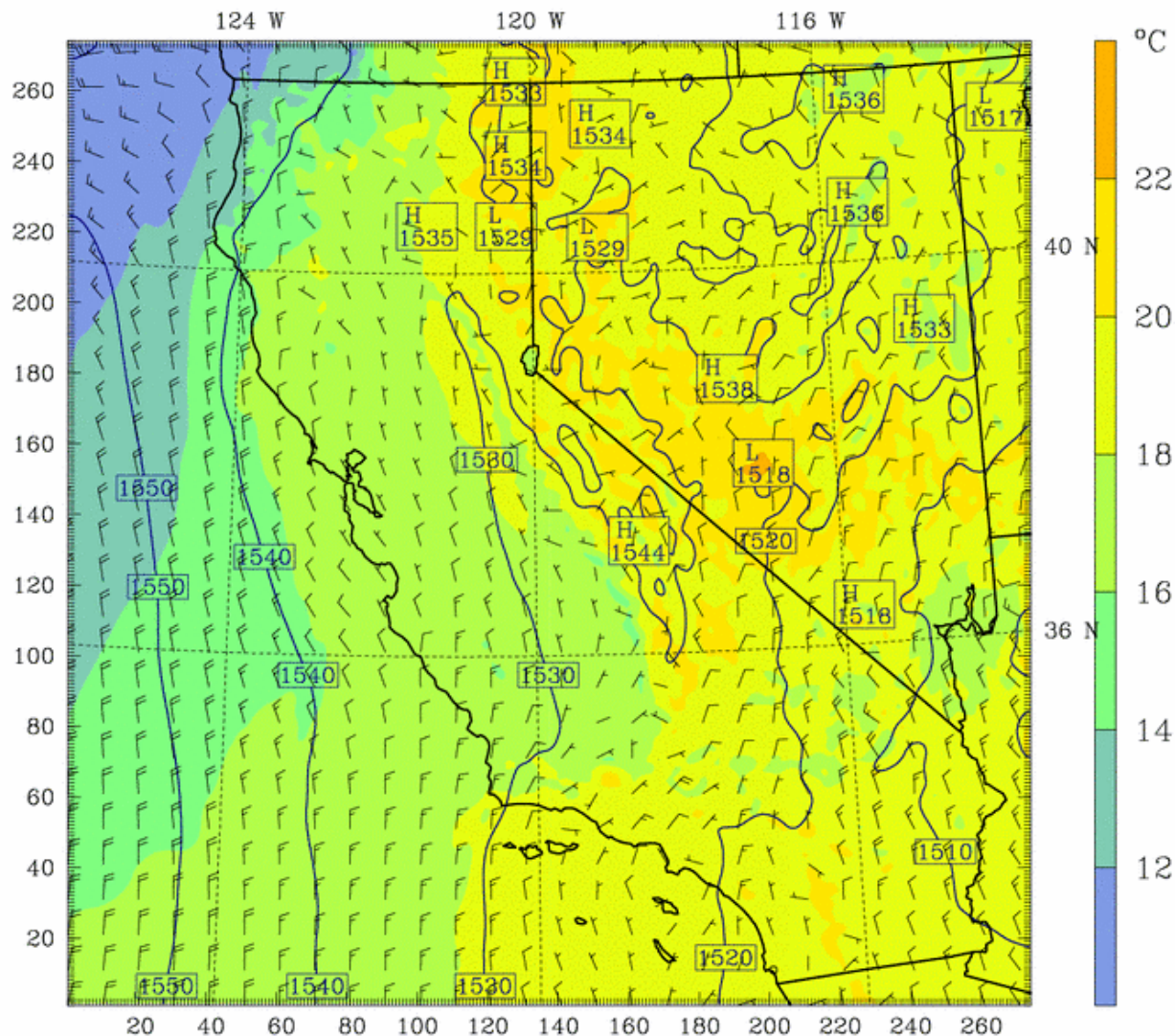
CANSAC MM5 Realtime: Domain 2 (12 km) Init: 1200 UTC Tue 05 Oct 04
 Fcst: 9.00 Valid: 2100 UTC Tue 05 Oct 04 (1400 PDT Tue 05 Oct 04)
 Temperature at pressure = 850 hPa sm= 1
 Geopotential height at pressure = 850 hPa sm=10
 Horizontal wind vectors at pressure = 850 hPa sm= 1



**850 mb
heights, temps,
and winds
from the medium
CANSAC
grid, 12 km**

BARB VECTORS: FULL BARB = 10 kts
 CONTOURS: UNITS=m LOW= 1460.0 HIGH= 1580.0 INTERVAL= 20.000
 Model info: V3.6.3 Grell Eta PBL Simple ice 12 km, 31 levels, 36 sec

CANSAC MM5 Realtime: Domain 3 (4 km) Init: 1200 UTC Tue 05 Oct 04
 Fcst: 9.00 Valid: 2100 UTC Tue 05 Oct 04 (1400 PDT Tue 05 Oct 04)
 Temperature at pressure = 850 hPa sm= 1
 Geopotential height at pressure = 850 hPa sm=10
 Horizontal wind vectors at pressure = 850 hPa sm= 1

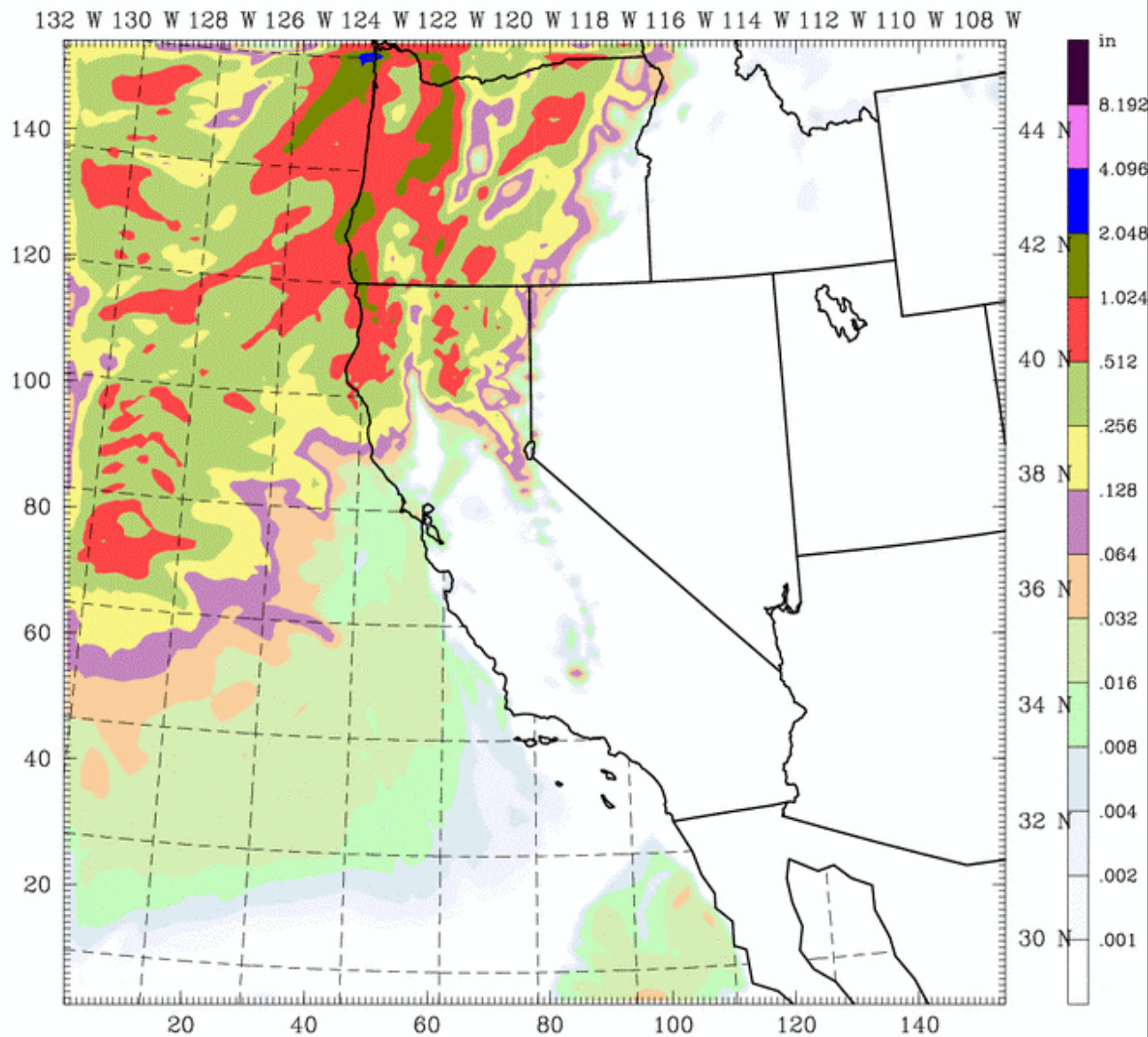


**850 mb
heights, temps,
and winds**

**from the
smallest
CANSAC
grid, 4 km**

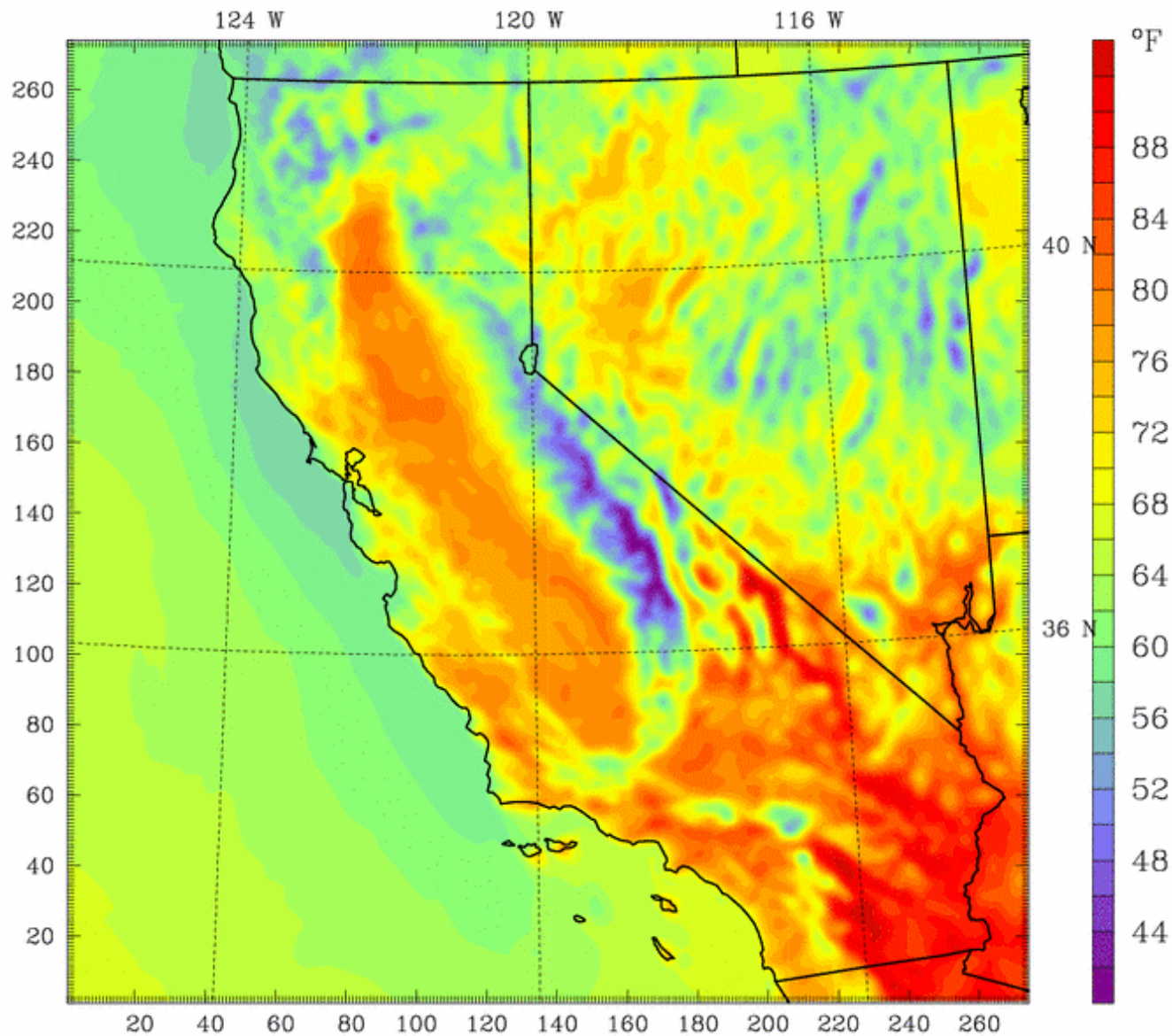
BARB VECTORS: FULL BARB = 10 kts
 CONTOURS: UNITS=m LOW= 1500.0 HIGH= 1550.0 INTERVAL= 10.000
 Model info: V3.6.3 No Cumulus Eta PBL Simple ice 4 km, 31 levels, 12 sec

CANSAC MM5 Realtime: Domain 2 (12 km) Init: 0000 UTC Thu 07 Oct 04
Fcst: 60.00 Valid: 1200 UTC Sat 09 Oct 04 (0500 PDT Sat 09 Oct 04)
Total precip. in past 24 h



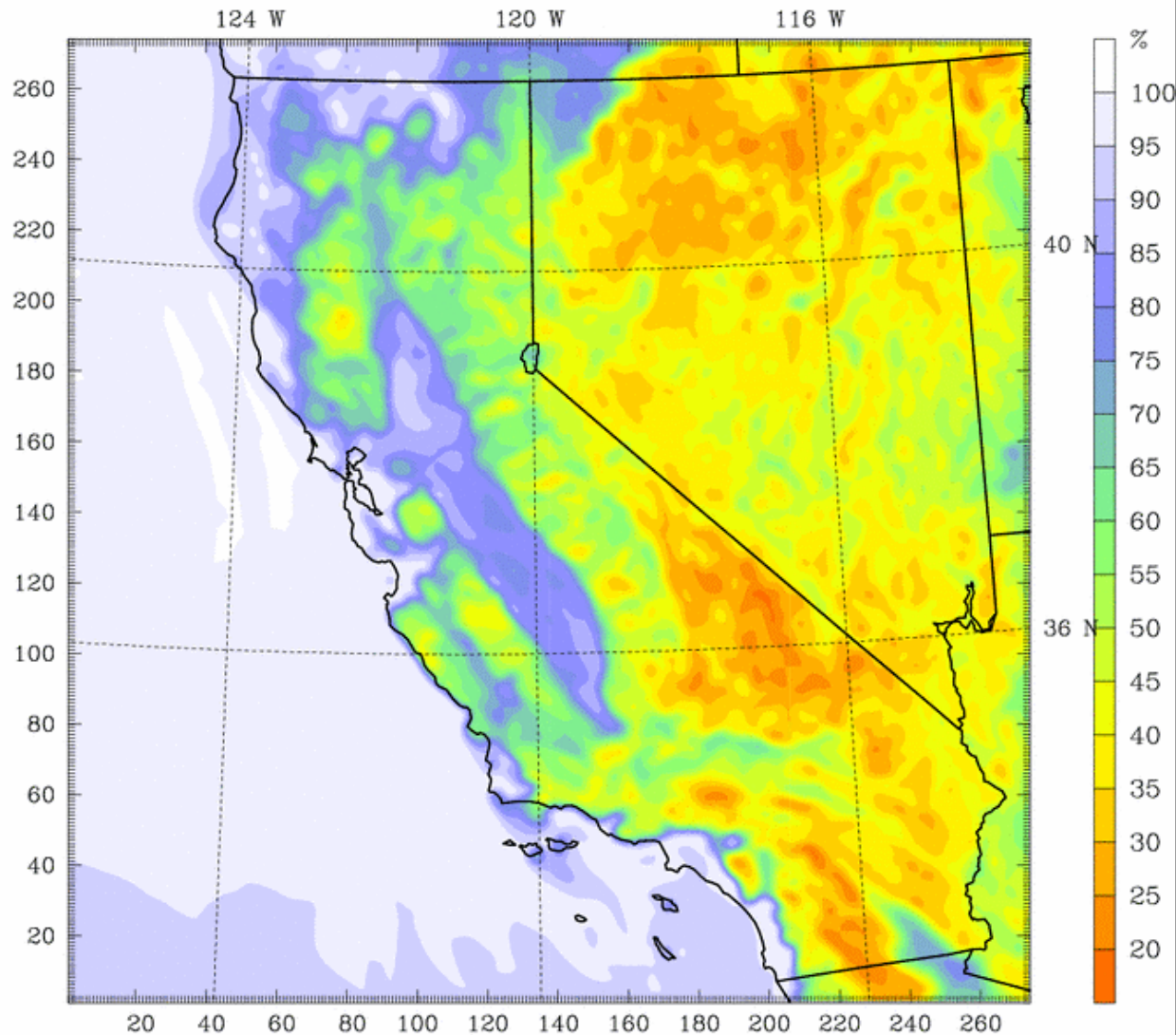
**24-hour
Precipitation,
from 4 am
Oct. 8th to
4am Oct. 9th**

CANSAC MM5 Realtime: Domain 3 (4 km) Init: 0000 UTC Wed 06 Oct 04
Fcst: 24.00 Valid: 0000 UTC Thu 07 Oct 04 (1700 PDT Wed 06 Oct 04)
Temperature at sigma = 0.999 sm= 1



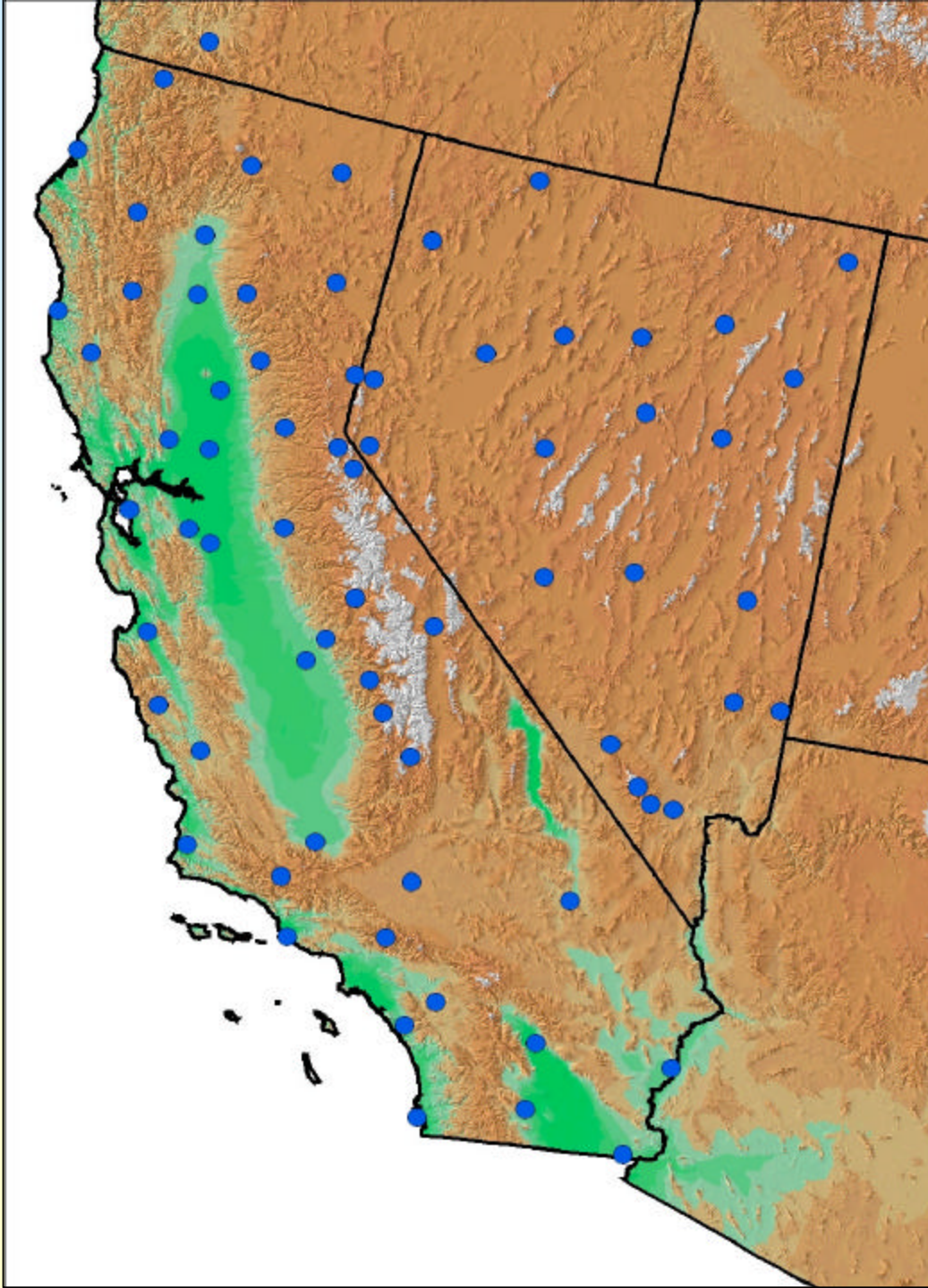
**24-hr surface
temperature
prediction
made back
in October,
valid 5 pm
on the 6th**

CANSAC MM5 Realtime: Domain 3 (4 km) Init: 0000 UTC Wed 06 Oct 04
Fest: 12.00 Valid: 1200 UTC Wed 06 Oct 04 (0500 PDT Wed 06 Oct 04)
Relative humidity (w.r.t. water) at sigma = 0.999 sm= 2



**12-hour
surface
RH prediction**

**Made 5pm
Oct 5th and
valid 5am
Oct 6th**



**With this “Sounding”
map, putting your
cursor over one of
the blue dots will
tell you the site name.**

**Clicking on it will
get you a vertical
profile of temp,
dewpoint and winds**

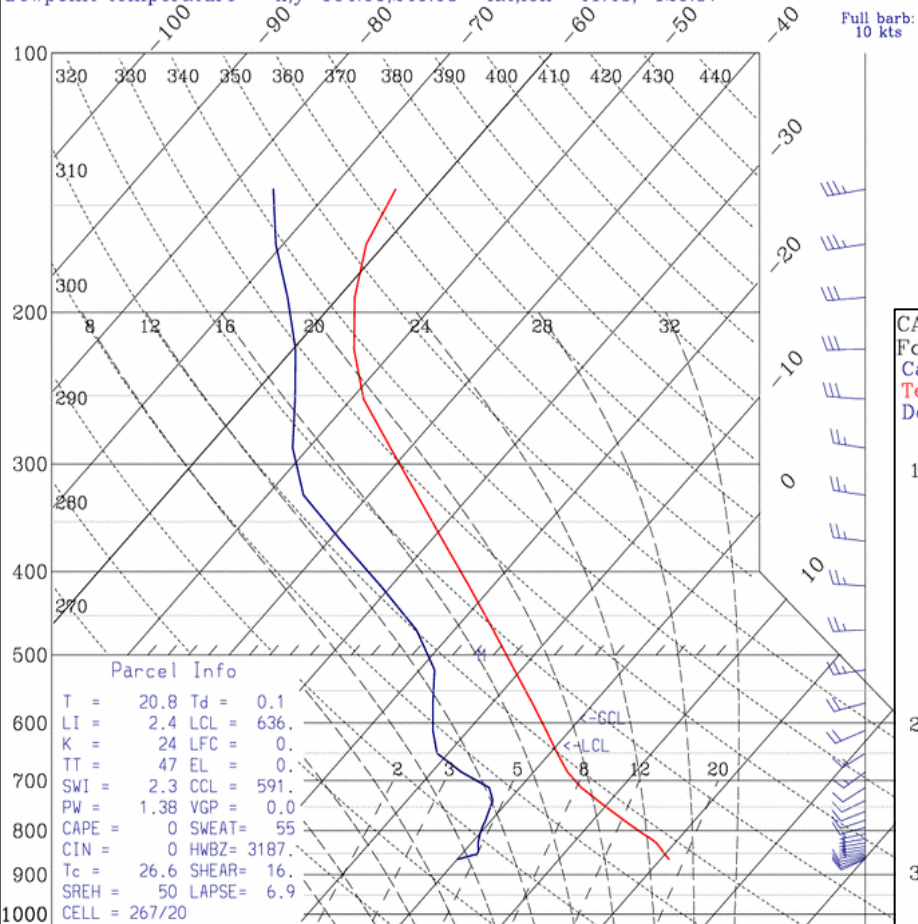
**The soundings are
available for each
3 hourly time out
thru 48 hours, and
can be looped**

CANSAC MM5 Realtime: Domain 3 (4 km) Init: 0000 UTC Thu 07 Oct 04
Fcst: 0.00 Valid: 0000 UTC Thu 07 Oct 04 (1700 PDT Wed 06 Oct 04)

Canby, CA

Temperature x,y=114.66,246.68 lat,lon= 41.43,-120.87

Dewpoint temperature x,y=114.66,246.68 lat,lon= 41.43,-120.87



Above, Canby model sounding
for 5 pm Wednesday, 10/6/04

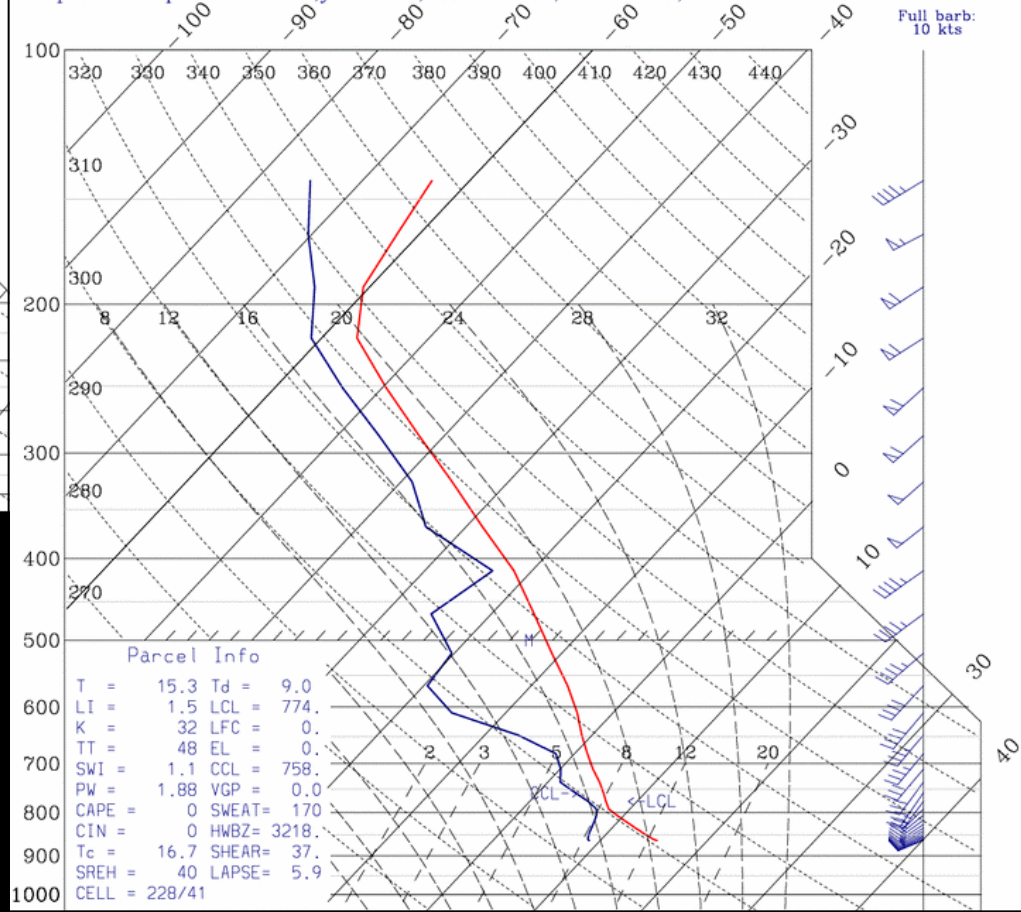
Below, Canby model sounding
for 5 pm Friday, 10/8/04

CANSAC MM5 Realtime: Domain 3 (4 km) Init: 0000 UTC Thu 07 Oct 04
Fcst: 48.00 Valid: 0000 UTC Sat 09 Oct 04 (1700 PDT Fri 08 Oct 04)

Canby, CA

Temperature x,y=114.66,246.68 lat,lon= 41.43,-120.87

Dewpoint temperature x,y=114.66,246.68 lat,lon= 41.43,-120.87



Below is a portion of the text version of
a sounding from the Ash Creek site

PRES(hPA)	HGT(M),	T(C)	TD(C) (DEG)	WDIR	WS(M/S)
891.77	1123.60	10.02	2.30	61.73	1.81
889.33	1146.35	10.66	2.69	55.57	1.80
886.41	1173.64	11.43	3.15	48.20	1.81
882.94	1206.39	12.36	3.69	39.69	1.86
878.81	1245.67	13.45	4.32	30.89	1.96
873.90	1292.77	14.40	4.85	27.49	2.10
868.06	1349.23	14.44	4.86	28.69	2.20
861.11	1416.94	14.08	4.65	32.09	2.24
852.83	1498.12	13.64	4.39	36.50	2.27
843.00	1595.40	13.01	4.13	41.35	2.29
831.34	1711.97	12.18	3.82	46.69	2.32
817.54	1851.63	11.26	3.34	54.80	2.25

Future Plans:

- Add more products at 4 km resolution
- Begin using an MM5-based **Ventilation Index** in California Smoke forecasts
- Make CANSAC MM5 output the source of data for our daily Smoke Transport and Stability Forecast
- Drive Blue Sky runs, to be used in conjunction with a Meteorologist's input

Daily Smoke Conference Calls

Conference calls are held daily at 1300 local. These are intended **to facilitate sharing of information, and to discuss smoke issues** relating to prescribed burning or wildland fire use (WFU). The calls are hosted by the Fire Weather Centers at Redding and Riverside.

Participants include:

- California ARB
- FWC Meteorologists
- Air District personnel
- Prescribed burn representatives

If you would like to join a call, at 1300 dial:

1 (877) 874-5440

The passcode is 357238 #

Once you are on the call, you will generally be asked to identify yourself, so that we know who all the players are for that day. If you need to drop off the call early, that's not a problem.



Any Questions?